



IFW

Docket No.: 0171-1250PUS1  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Yukio NAGASAKI et al.

Application No.: 10/561,152

Confirmation No.: 9582

Filed: December 16, 2005

Art Unit: N/A

For: DIAMINE HAVING QUINOXALINE UNIT,  
POLYIMIDE PRECURSOR, POLYIMIDE AND  
USE THEREOF

Examiner: Not Yet Assigned

**SUBMISSION OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

On December 16, 2005, Applicant filed an Information Disclosure Statement which included an International Search Report (ISR). Applicants submit herewith a copy of the International Preliminary Report on Patentability, which refers to documents cited in the International Search Report.

Should there be any questions, the Examiner is invited to contact Richard Gallagher, Registration No. 28,781, at (703) 205-8008.

Dated: June 26, 2006

Respectfully submitted,

Attachment(s)

By

Gerald M. Murphy, Jr.

Registration No.: 28,977

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>FAP-3877</b>		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. <b>PCT/JP2004/008789</b>	International filing date (day/month/year) <b>16.06.2004</b>	Priority date (day/month/year) <b>17.06.2003</b>	
International Patent Classification (IPC) or national classification and IPC			
Applicant <b>NISSAN CHEMICAL INDUSTRIES, LTD.</b>			

  

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>4</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

  

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/IP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/008789

Box No. I	Basis of the report
1.	<p>With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:</p> <p><input type="checkbox"/> international search (Rule 12.3 and 23.1(b))</p> <p><input type="checkbox"/> publication of the international application (Rule 12.4)</p> <p><input type="checkbox"/> international preliminary examination (Rule 55.2 and/or 55.3)</p>
2.	<p>With regard to the elements of the international application, this report is based on <i>(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)</i>:</p> <p><input checked="" type="checkbox"/> the international application as originally filed/furnished</p> <p><input type="checkbox"/> the description:</p> <p>pages _____ as originally filed/furnished</p> <p>pages* _____ received by this Authority on _____</p> <p>pages* _____ received by this Authority on _____</p> <p><input type="checkbox"/> the claims:</p> <p>nos. _____ as originally filed/furnished</p> <p>nos.* _____ as amended (together with any statement) under Article 19</p> <p>nos.* _____ received by this Authority on _____</p> <p>nos.* _____ received by this Authority on _____</p> <p><input type="checkbox"/> the drawings:</p> <p>sheets _____ as originally filed/furnished</p> <p>sheets* _____ received by this Authority on _____</p> <p>sheets* _____ received by this Authority on _____</p> <p><input type="checkbox"/> a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.</p>
3.	<p>The amendments have resulted in the cancellation of:</p> <p><input type="checkbox"/> the description, pages _____</p> <p><input type="checkbox"/> the claims, nos. _____</p> <p><input type="checkbox"/> the drawings, sheets/figs _____</p> <p><input type="checkbox"/> the sequence listing (<i>specify</i>): _____</p> <p><input type="checkbox"/> any table(s) related to sequence listing (<i>specify</i>): _____</p>
4.	<p>This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).</p> <p><input type="checkbox"/> the description, pages _____</p> <p><input type="checkbox"/> the claims, nos. _____</p> <p><input type="checkbox"/> the drawings, sheets/figs _____</p> <p><input type="checkbox"/> the sequence listing (<i>specify</i>): _____</p> <p><input type="checkbox"/> any table(s) related to sequence listing (<i>specify</i>): _____</p>

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/008789

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
1. Statement	
Novelty (N)	Claims <u>1-13</u> YES Claims _____ NO
Inventive step (IS)	Claims <u>1-13</u> YES Claims _____ NO
Industrial applicability (IA)	Claims <u>1-13</u> YES Claims _____ NO
2. Citations and explanations (Rule 70.7)	
	Document 1: WO 02/103825 A1 (Showa Denko Kabushiki Kaisha), 27 December 2002, abstract and claims
	Document 2: JP 2001-35494 A (NEC Corp.), 09 February 2001, examples
	Document 3: JP 2-269124 A (Director General of the Agency of Industrial Science and Technology), 02 November 1990, claims
	Document 4: EP 420417 A1 (International Business Machines Corp.), 03 April 1991, entire text
	Document 5: JP 6-316635 A (SRI International), 15 November 1994, abstract, claims and paragraph [0001]
	<p>The inventions set forth in claims 1 to 13 are not disclosed in any of documents 1 to 5, which are cited in the international search report, and would not have been obvious to a person skilled in the art.</p> <p>Documents 1 to 4 disclose quinoxaline compounds with base skeleton structures that are identical or similar to those of the compounds represented by formula (1) from the inventions set forth in the present application, and also disclose polymers thereof. However,</p>

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/008789

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

documents 1 to 4 do not disclose or suggest configurations in which the aforementioned quinoxaline compounds are diamines, and said polymers are not polyimides that can be obtained by reacting a diamine and a tetracarboxylic acid component. In addition, document 5 discloses liquid crystal polymers that have quinoxaline skeletons, but the structures thereof are different from those of the compounds from the inventions set forth in the present application. Meanwhile, the inventions set forth in the present application can be said to exhibit an effect whereby it is possible to provide polymers that exhibit charge carrier transport properties in addition to superior heat resistance characteristics, coating strength characteristics and thin film formation properties as a result of introducing a specific quinoxaline skeleton into the main chain of the polyimide.